A Qualitative Application of the Diffusion of Innovations Theory to Examine Determinants of Guideline Adherence Among Physical Therapists

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Background. Evidence-based practice has become a major issue in physical therapy. Many evidence-based guidelines, however, are not used extensively after dissemination, and interventions aimed at increasing guideline adherence often have limited effects.

Objective. As a prerequisite for changing this situation, the aims of this study were to gain an in-depth understanding of the determinants of guideline adherence among physical therapists in the Netherlands and to evaluate the opportunities of a theoretical framework in this respect.

Design and Methods. This observational study consisted of 3 focus group interviews (n=12, 10, and 8) between November 2002 and January 2003. Physical therapists were asked to discuss their opinions about and experiences with the Dutch guidelines for low back pain. Data were analyzed qualitatively using a directed approach to content analysis. Both the interview route and the analysis of the interviews were informed by Rogers' Diffusion of Innovations Theory.

Results. Our study yielded in-depth insights into the various determinants of guideline adherence. Overall, the participants had rather unfavorable opinions about issues related to the dissemination of the guidelines (first phase of the diffusion process) and provided relatively little information on the subsequent adoption process (second phase of the diffusion process). The theoretical framework appeared to be a useful tool to properly structure the focus group interviews, to systematically analyze the data collected, and to determine that supplementary interviews would be necessary to cover the entire diffusion process.

Conclusions. Our findings indicated that the diffusion process of guidelines among physical therapists was not yet completed. The use of theory can provide added value to guideline implementation studies.

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Evidence-based practice has become a major issue in physical therapy.[1,2] *Evidence-based practice* has been defined as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients."[3(p2)] Over the past 2 decades, physical therapists increasingly have been encouraged to take an evidence-based approach.[1,4] Although most physical therapists have a favorable attitude to the use of evidence in practice, they also encounter several barriers to evidence-based practice.[1,5] As a means of enhancing evidence-based physical therapy, clinical practice guidelines have become a familiar part of physical therapist practice.[6] Such guidelines thus create an ideal opportunity to systematically bring scientific evidence into practice.[7] Therefore, clinical practice guidelines are a promising and effective tool for improving the quality of care.[8,9]

Many guidelines, however, are not extensively used after dissemination.[10–12] With regard to the further adoption and implementation of guidelines, it has been suggested that it is important to acknowledge the complexity of clinical behavior and especially the role of motivational determinants, such as opinions, values, and vested interests.[13] Many interventions aimed at changing behavior have been pursued in the absence of clear information about the reasons why practitioners did not exhibit the preferred behavior.[14] Consequently, such interventions may have lacked a rationale for the choice of their content and, therefore, produced only small to moderate effects.[11,15–17] More research into the details of actual implementation is needed to better understand the critical determinants of change in practice, and such research preferably should be systematic and theory based.[11,15] This article reports on one of the first steps in such a planned approach,[18] that of theory-based focus group interviews amongst Dutch physical therapists with regard to the national guidelines for the treatment of people with low back pain.

The Dutch physical therapy guidelines for low back pain were developed by the Central Guideline Project (CGP) under the auspices of the Royal Dutch Society of Physiotherapy (referred to below as "the Society") in collaboration with the Dutch Institute of Allied Health Care.[19] The guidelines describe the diagnostic and therapeutic actions that physical therapists should perform when faced with patients with nonspecific low back pain (Fig. 1). This diagnosis is defined as "low back pain without a specified physical cause, eg nerve root compression (radicular syndrome), trauma, infection or tumour."[19(p83)] The essential physical therapy decisions recommended by the guidelines are based on the best available scientific evidence. A vital difference from previous practice is the lower importance assigned to the management of patients' impairments. Instead, the guidelines emphasize an activating approach, in which physical activity is advised instead of bed rest, active strategies such as exercise therapy and training are applied, and a hands-off policy is recommended for patients with acute low back pain. The guidelines also introduce a behavioral approach aimed at restoring activities and social participation for patients with chronic low back pain.

1. **Contact physician in case of specific low back pain**

2. **Additional diagnostics**
   a. Use questionnaires to assess daily functioning
   b. Assess psychosocial factors that influence recovery process

3. **Treatment objectives**
   a. Enhance knowledge and insight
   b. Improve activities and social participation
   c. Improve relevant physiological functions
   d. Improve coping strategies

4. **Treatment strategies**
   a. Provide information and advice
   b. Train physiological functions and activities

5. **Number of sessions**
   a. ≤3 in case of normal recovery process

6. **Provide the following information:**
   a. Stay active
   b. Pain does not always mean tissue damage
   c. Low back pain has a favorable prognosis
   d. Practice sports on a regular basis
   e. Perform exercises on a regular basis
   f. Restrict work to actual capacity

Figure 1.
Recommendations of Dutch physical therapy guidelines for low back pain.[19]

The guidelines are composed of several parts: a summary, an extensive description of preferred procedures and available evidence, and recommended measurement instruments (Fig. 2). As the implementation of the guidelines was recognized to be the "Achilles heel" of the project, the CGP decided to apply a cultural-political strategy for their development.[20] Such a strategy acknowledges that physical therapists, as relatively autonomous professionals, should be regarded as active partners in the developments and innovations in their field. In addition, the CGP chose to design a stepwise diffusion plan for the dissemination and adoption of the guidelines.[20] Such a plan recognizes that the consecutive steps of the diffusion process may present different barriers, which, in turn, may require different diffusion strategies (Fig. 3). Despite these deliberately selected development and diffusion efforts, adherence to the Dutch physical therapy guidelines for low back pain recently was found to be still only moderate.[12,21,22]

This article reports on a qualitative study to gain an in-depth understanding of the determinants of adherence to the guidelines for low back pain among physical therapists in the Netherlands. Because Dutch physical therapists were assumed to perceive the then-recently developed guidelines, with their change in treatment strategies, as an innovation, we adopted the stepwise Innovation Decision Process of Rogers' Diffusion of Innovations Theory as the basis for the present study.[23,24] Rogers' widely used theory covers the entire diffusion process and offers the opportunity to integrate various theoretical constructs in the different steps of the diffusion process.[25] Its application, therefore, was considered especially helpful in examining the progression of the diffusion process of low back pain guidelines and in identifying the potential promoting and impeding determinants throughout the diffusion process.

1. A 2-page summary of the main issues of the guidelines for daily use: "the card"

2. A booklet that provides:
   a. A description of the recommendations for the diagnostic and therapeutic process when treating patients with nonspecific low back pain
   b. An extensive description of the best available evidence and an explanation of the process of developing the guidelines

3. Three recommended measurement instruments:
   a. Visual analog scale for pain
   b. Quebec Back Pain Disability Scale
   c. Dutch version of the Patient-Specific Functional Scale

Figure 2.
Contents of the Dutch physical therapy guidelines for nonspecific low back pain.[19]

Rogers' Innovation Decision Process[23] distinguishes 5 successive stages (Fig. 4).[26] The first 2 are mental stages and are referred to as the "dissemination process." The first dissemination stage, the "knowledge stage," requires that the potential users become acquainted with the innovation and develop an adequate understanding of it. In the subsequent "persuasion stage," the potential adopters have to develop a positive attitude toward the innovation.[23,27] The decisive factors for this mostly affective process are the perceived characteristics of the innovation, such as its relative advantage, compatibility, complexity, "trialability" (the ability to test an innovation), observability (the degree to which the results of an innovation are visible to others), and flexibility.[23,28] In addition, the perceived consequences, that is, the perceived social or material risks, may play a part in this persuasion stage.[23,27,29]

The last 3 stages of the diffusion process are behavioral stages and are called the "adoption process." First, potential adopters have to decide whether to adopt or reject the inno-

Diffusion Steps	Likely Barriers	Strategies
Orientation	• Not familiar with • No interest	• Publications in physical therapy journals • Permanent topic at professional conferences • Thematic meetings (work groups)
Insight	• No knowledge or understanding • Not aware of own performance	• Guideline examination form (individual) • Thematic meetings (work groups)
Acceptance	• Negative attitude • Not ready to change	• Discussing guideline (work groups) • Discussing guideline (collaboration with general practitioners)
Change	• Not starting the implementation • Not continuing the implementation	• Guideline examination form (individual) • Discussion guideline (work groups) • Competency manuals (individual)

Figure 3.
Diffusion plan of the Dutch physical therapy guidelines for nonspecific low back pain.[20]

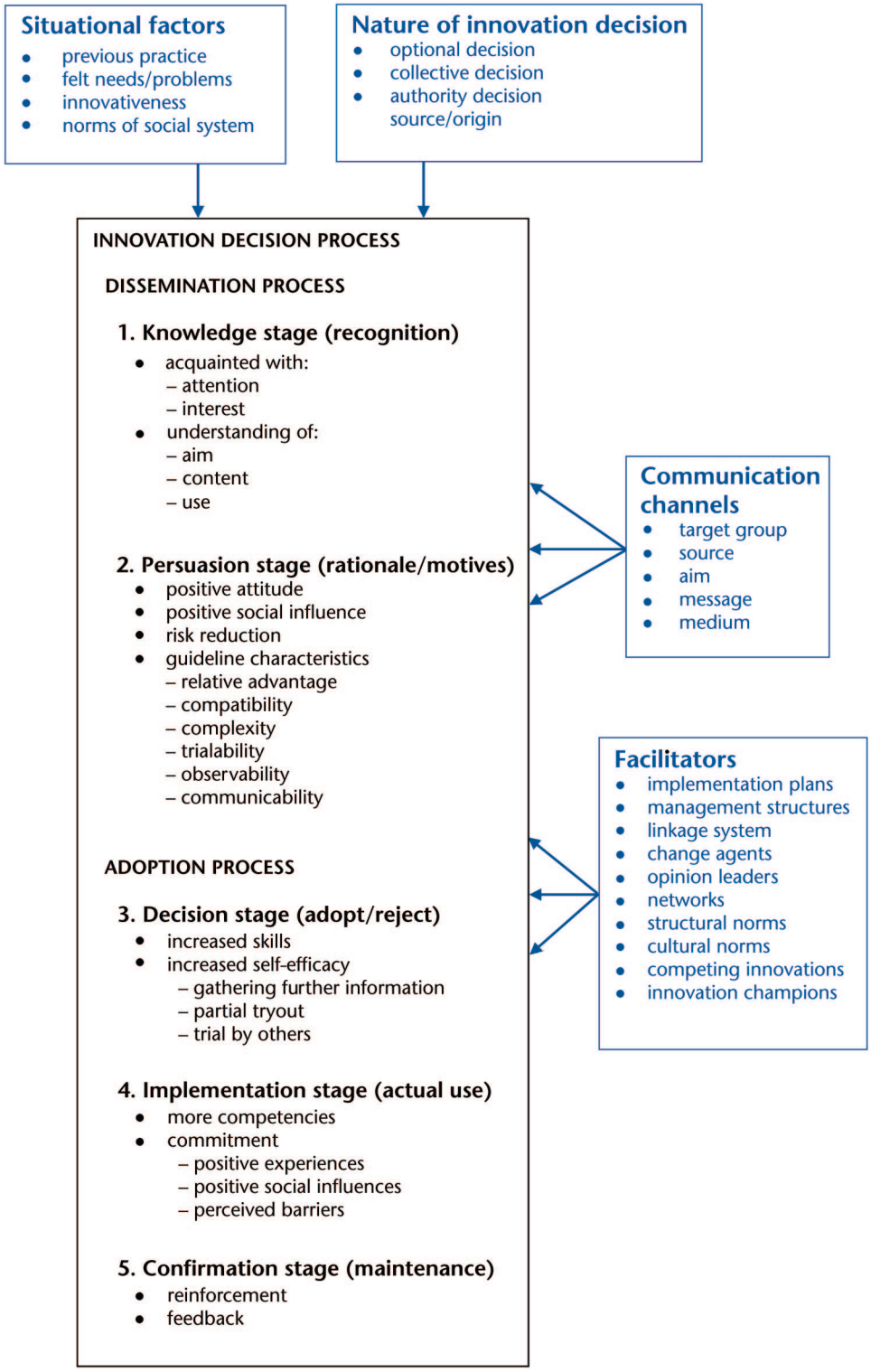

Figure 4.
Theoretical framework based on Rogers' Innovation Decision Process.[23,26]

vation. Activities in this "decision stage" include gathering further information, trying out the innovation to a limited degree, and trial by others. During the subsequent "implementation stage," the diffusion process can be facilitated by positive experiences gained previously and by positive social influences.[23,30] In contrast, perceived barriers may impede the actual implementation. In the "confirmation stage," the innovation becomes part of the work routine, requiring that its users receive reinforcement and positive feedback.[23,31] The progression of an innovation through the 5 successive stages is further influenced by situational factors, the nature of the innovation decision, the communication channels applied, and the facilitators involved (Fig. 4, blue parts).[26]

In the present study, Rogers' theory informed both the focus group meetings and the analysis of the interviews. This report concentrates on the 5 consecutive stages of the diffusion process, as described above and depicted in Figure 4. For a more extensive outline of Rogers' Innovation Decision Process, readers are referred to the primary source.[23] The results of this study may contribute to subsequent implementation studies, the debate on evidence-based medicine,[32,33] and recent developments in the use of theory in implementation research.[34–36]

Method

Focus Group Interviews

The focus group interview route was constructed in accordance with the theoretical framework (Fig. 4). The semistructured route consisted of a topic list, meant to ensure that the main issues with regard to the 5 steps of the innovation decision process would be discussed, and included follow-up probes to elicit more detailed information.[37] To avoid prejudiced interpretation on the part of the researchers and to stimulate a free discussion among the focus group participants, the questions were formulated in an open and inviting way.[37,38] For example, to explore the topic of "persuasion stage," the question could read "We are highly interested in your opinions on the guidelines," while the follow-up prompt of "perceived complexity" could be addressed by a query such as "We have not heard anything on the user-friendliness of the guidelines yet." Another example is the question "What could you tell each other about the way you apply the guidelines in your practice?" to investigate the topic of "implementation stage" and the query "While you are applying the guidelines, we are interested in whether you also come across any obstacles" to address the follow-up prompt of "perceived barriers." An eAppendix showing a complete focus group interview route is available at www.ptjournal.org.

To obtain a representative sample of physical therapists, the interviews were conducted during meetings of peer consultation groups (PCGs), as these meetings at the time were obligatory for members of the Society and because practice guidelines were one of the subjects that the Society had recommended them to discuss. The sampling procedure started at the Society's Department of Staff Training. The head of the department provided telephone numbers of the 3 regional PCG coordinators who covered the southern part of the Netherlands (which was chosen for logistic reasons). Two of these coordinators asked for additional authorization by the Society, which was regarded as conflicting with the independent nature of the study. The third regional coordinator provided us with telephone numbers of the 7 local PCG chairs within his region. Four of these local PCG chairs were willing to participate but were unable to organize a PCG meeting in time. Three PCGs were willing to participate as well as able to devote one of their meetings to discussing practice guidelines within the time frame of the study.

The focus group interviews took place between November 2002 and January 2003, and the first, second, and third interviews involved 12, 10, and 8 physical therapists, respectively. The total sample consisted of both men (n=21) and women (n=9) and covered a wide range in terms of age (25–62 years) and number of years of work experience (5–30 years). The interviews were conducted by 2 members of the research team (GMJR and STJR), who were both practicing physical therapists. Being experienced physical therapists as well as experienced lecturers in physical therapy, both interviewers were assumed to possess the skills and abilities to lead focus groups effectively.[37] They alternately acted as chair and observer.[38] The observer recorded the interview on audiotape, prepared minutes of the meeting, and took notes about more-general aspects of the discussion, such as the atmosphere, group dynamics, and emotions expressed.[38] The interviews were conducted at the location where the PCGs usually met and lasted 75 to 90 minutes. As no new information was obtained during the third interview, the focus group procedure was regarded as completed (theoretical saturation).[38]

Data Analysis

The audiotaped focus group interviews were transcribed verbatim and imported as text documents in the NVivo 2.0 qualitative analysis program.* We performed a qualitative content analysis with a directed approach.[37,39] Such an approach is appropriate if existing theory and prior research about a phenomenon (eg,

* QSR International Pty Ltd, 28 Hoghton St, Southport, United Kingdom PR9 OPA.

the diffusion of physical therapy guidelines) are incomplete or would benefit from further description.[39] Our structured analysis was based on a prestructured coding scheme.[39,40] Such a coding scheme serves to classify large amounts of text into a predefined number of categories that represent similar meanings.[39] Our coding scheme had been composed so as to reflect the most salient aspects of Rogers' 5 diffusion of innovation stages. The initial codes thus mirrored the topics (eg, "persuasion stage" and "implementation stage") and prompts (eg, "perceived complexity" and "barriers") of the focus group interview route, while the entire coding scheme looked similar to the framework shown in Figure 4. Additional flexible codes were used to label other prominent topics that emerged during the analysis.[39,40] The directed approach to content analysis, therefore, could serve to conceptually validate or extend the theoretical framework used.[39]

The initial coding was done by the first author (JH), as she was experienced in directed qualitative content analysis and had a behavioral science background and physical therapy background but had not been present during the focus groups interviews. The interviewers (GMJR and STJR), both of whom have a Master of Public Health degree, thoroughly checked the first coding for its exhaustiveness and appropriateness by verifying whether all instances of a particular theoretical construct had been identified and correctly categorized. Disagreements were discussed by comparing the text passages with the operational definitions of the various constructs until consensus was reached. In the end, all flexible codes were integrated in the original code tree that represented Rogers' Innovation Decision Process.

Results

General Observations

All 3 focus group interviews were characterized by a pleasant and open atmosphere. The debate was often quite lively, and sometimes feelings even ran high. Although the interviews elicited a wide variety of opinions, the common tendency among the respondents was to dismiss practice guidelines in general and the guideline for low back pain in particular.

Knowledge Stage

Acquainted with innovation. All but one of the focus group members had received the guidelines by mail, but most of them had not felt much inclined to pay much attention to it.

> Yes, that is how they were sent to me, without any explanation or whatever. So I briefly glanced through the guidelines and then put them aside. Who cares? And I left it at that.

> We received a whole set of guidelines at once. I think there were 4 of them, and you do not read all 4 of them immediately, and once you put them aside, they stay aside.

Likewise, most physical therapists had not taken a warm interest in the guidelines. For instance, one therapist commented, "No, I read the essence, the card, for instance." Another therapist, commenting on the content of the guidelines, stated, "I did not read it. I thought the term 'nonspecific' was already dubious, so I did not read any further." Another reason was the large size of the guidelines (eg, "Such a huge heap, such a bundle of paper, such a bundle of characters."). This way of presenting information did not fit in well with the respondents' more practical learning attitude. According to one therapist, "That is because we have been educated to *do* things. So if you give this group a pile of papers, who will read them? I think nobody will."

Understanding of innovation. The perceived aims of the guidelines were related to standardization and quality of care.

> It turned out that the aim of the guideline was to create a bit more uniformity in practical procedures. In other words, it should not be possible that one physical therapist uses one approach and the other a different one. That [lack of consistency] is not good for the profession.

Few data were provided on the different sections of the guidelines and their actual content. Most physical therapists regarded the guidelines as a package of general information that could be interpreted in various ways (eg, "What actually *is* nonspecific low back pain?"). For some therapists, the distinction between specific and nonspecific low back pain was an eye-opener. Others felt it mostly related to their own skilfulness. As one respondent stated, "To me, 'nonspecific' stands for 'I don't know,' meaning that I should have the patient checked by a colleague or that he should be examined by a good orthopedist or neurologist." A commonly shared idea was, however, that nonspecific low back pain "includes such a variety of disorders that they cannot be captured within one single guideline. You will often try to make a specific case for you and your patient, and different physical therapists may not come up with exactly the same diagnosis."

The respondents disagreed about the intended use of the guidelines, especially about the extent to which they should be seen as obligatory.

> Although they are called "guidelines," they want all of us to adhere to them. You're supposed to do what the guidelines prescribe, for all patients.

> Of course, it is not necessary to follow the guidelines exactly; it is more like: this is roughly the approach, regardless of the background you have.

> As long as you have good reasons to do so, you are free to work in your own way, because that is more effective than what is prescribed, or because you have another objective in mind, then there should be no problem.

Persuasion Stage

In addition to the characteristics of the guidelines, whose influence had been predicted by the literature, a commonly expressed doubt concerned the *credibility* of the guidelines. This was partly due to the perceived lack of evidence of the effectiveness of the various physical therapy interventions.

> More effectiveness research should first be done with regard to physical therapy interventions. That could then be used for the guidelines.

> There is a lot that helps for sure. Take, for instance, massage—it is not proven that it is not effective, is it?

Other therapists doubted the credibility of the available evidence.

> The way it is described in the guidelines, that is not the way it works. You're actually expected to do no more than coaching, and then it [the pain] should spontaneously disappear. But in practice, it simply does not spontaneously fade away.

Some of the participants, however, felt more confident.

> If the Society assures you that the guidelines are evidence-based, then you, as a practicing physical therapist, can assume that that is correct. Otherwise, you could just close down the whole club [the Society].

Some of the focus group members saw advantages for the profession. The guidelines, for instance, are "good for the uniformity of care" and give "a global overview of treatment options." Others reported more-personal benefits (eg, "I think it is a great advantage that you start thinking again about what you are actually doing . . . that you can see what the state of the art is and how you should act."). The majority, however, saw mainly disadvantages for their practical work (eg, "If you work according to the guidelines, you are constrained in your performance, and that is neither good for the physical therapist nor good for the patient."). One commonly agreed-upon exception was made: "If there were a guarantee that applying the guidelines for low back pain would speed up the patients' recovery processes, yes, then I would act in accordance with them."

Most physical therapists saw problems regarding the compatibility of the guidelines. These problems were related to the patients; the therapists' autonomy, experience and education; and other, competing guidelines.

> I have a lot of trouble with them [the guidelines], because each patient is different. Their treatment should be tailored to their specific characteristics. And indeed, all patients wish to be treated in a different way.

> What would be left of your independence, your own competence, your own practical experience?

> I completed my education only 5 years ago, and I learned things that the guidelines say I shouldn't do. Am I to conclude then that my training was useless?

> It simply does not fit in with the way I normally work.

> The main problem is that the regional or hospital guidelines, which physical therapists are expected to adhere to, are not in line with the national guidelines, or the other way around.

The guidelines for low back pain were regarded as quite complex, mainly because of the syndrome they addressed.

> The guidelines say, if you don't know the cause, then it is nonspecific. But I regard it more as a lack of knowledge on my part.

> When you do some additional courses, such as manual therapy, you notice that you become more able to identify specific problems.

> Yes, is your nonspecific the same nonspecific as in the guideline?

One participant concluded, "Only specific low back problems can be included in guidelines, resulting in a whole lot of small guidelines. So, they [the present guidelines] should definitely be split up."

Although some physical therapists stated that "anything can be tried," most of them felt that the trialability of the guidelines was limited. This had to do with the way the guidelines had been presented.

> If they had made them somewhat easier, or if they had been explained in a lecture, then it would have been much easier, much more practical.

> That is what you are used to in courses. There you pick up some practical things, which you think you can apply. But these guidelines are just presented very, very badly.

The interviews offered little information with regard to the observability of positive effects, even though such observability was expected to stimulate guideline adherence. One therapist stated, "If others had better results when working in accordance with the guideline, then I would start working in the same way." The same would hold in case current practice did not show favorable effects. A therapist stated, "If you are getting poor results, then it becomes interesting to see what your neighbor is doing, especially if he has better results."

The majority of the physical therapists regarded the flexibility of the guidelines as minimal: much too re-

strictive, much too standardized, and a coercive protocol from which deviations were not allowed. This also related to the diversity of patients. One respondent stated, "Three patients with low back pain, who are similar according to the guidelines, can get 3 completely different treatments from me. And then the guidelines would force you to use the same approach, because guidelines can't make that distinction." Other participants perceived more freedom. One therapist responded, "But of course, I'm free to take or leave these things, to look at whether they suit my own ideas of how to approach my patients." Yet, a broadly shared opinion was that the guidelines "should be more like a framework with more freedom of choice."

Several, mostly negative, consequences were discussed. There were, for instance, some concerns about the future of the profession.

> You throw away part of your job.
>
> No evidence base available for physical therapy? Then no guidelines! Otherwise, you destroy the whole profession.

Other respondents foresaw a shortage of physical therapists. As one participant commented, "I already know some physical therapists who have quit their job because they do not like all this." In addition, several practice requirements were anticipated.

> My practice would have to be completely reconstructed.
>
> A psychologist needed, extensive training equipment needed. And who is going to pay for that?

Some participants were already complaining about financial compensations that did not materialize. One respondent commented, "So, we are supposed to be engaged in quality of care, but we're still waiting for the money." In addition, most physical therapists thought that there would be financial consequences, in which their fees would come to depend on whether they adhered to the guidelines. One therapist remarked, "I think the insurance companies are going to use them [the guidelines]. That is rather threatening." Other therapists, however, questioned the legitimacy of this consequence. One therapist stated, "We are all certified physical therapists, who also take part in advanced courses. And all that is suddenly regarded as worthless, because we have to work in accordance with the guidelines?"

Decision Stage

No clear statements were made about the decision to adopt or reject the guidelines, but the physical therapists mentioned several actions they should or would engage in during this stage. For instance, gathering further information with regard to the content of the guidelines was presumed to activate the adoption decision. According to one therapist, "That would at least allow you to consider more carefully whether it appeals to you." The physical therapists clearly differed, however, in their efforts to gain new knowledge or to acquire new skills, although they basically felt the required competencies should be present.

> Because the guidelines were written for us. If, on average, we did not possess the knowledge and skills, then "those" who produced the guidelines should say that you were only allowed to apply them after you had taken some additional courses.

Not many physical therapists reported partially trying out the guidelines. A participant stated, "Now and then I apply parts of it." Neither did the participants provide much confirmation of trial by others. As one participant noted, "In my opinion, less than 50% of the colleagues have ever read these guidelines, let alone worked with them. Where do you find people who have experience with them?" They even seriously doubted the reports of their colleagues claiming to apply the guidelines. One participant responded, "My experience is that therapists say they adhere to the guidelines, although they still all work in different ways."

Implementation Stage

None of the participants had applied the guidelines regularly or completely. They had implemented them not at all or only partly, or they had used them in a somewhat different way than originally intended.

> I have never, ever treated one patient in accordance with the guidelines.
>
> I use small parts, or I find I'm already doing the things that are recommended, and then I think "Gosh, I am not doing so badly."
>
> Well, I wouldn't say I really use them . . . not as such.
>
> It demands a very rigorous strategy. That is not what I do. I read the guidelines, and I agree with them, but I do not use them strictly as they are intended.
>
> Well, if I have a very difficult patient, with whom I'm not making any progress, then perhaps yes.

Little practical experience with the guidelines was reported. Some of the experience they had was positive (eg, "I started to pay somewhat more attention to the social participation aspect"), whereas some of the experience they had was negative (eg, "Then you hear stories [from patients], such as, 'I'd rather go to a sports masseur; at least then I will be massaged'—so all at once you've turned into a bad physical therapist.").

Several sources of social influence were mentioned, such as conflicts of interest with patients.

> To patients, the story of nonspecificity is often hard to sell.
>
> The patients mostly want to go back to the level of impairments.

Although the guidelines seem to be the cause of this problem, they also can be used to solve it.

> In the case of disagreement between physical therapist and patient about the treatment policy, you can always turn to the guidelines, and you can argue while showing them these national guidelines.

A second type of social influence came from colleagues.

> Within a group practice, I think it is important that there are agreements about the implementation of certain procedures. At least you should ensure that your treatments are in accordance with the same principle used within the practice. What other practices do, that's their business, of course.

It became only partly clear to what extent the physical therapists knew how to use the guideline. One therapist stated, "I do not know exactly what the requirements are." Although some physical therapists expected to possess the required knowledge and skills, others thought that "the psychological skills are lacking. We have not been trained to do that, and then suddenly it appears in a guideline as a treatment strategy. However, to some extent, and subconsciously, you definitely do these things in a correct way."

Notwithstanding the low level of guideline implementation, the participants perceived a variety of barriers.

> The problem is the time. If you do something new, then at first you lack sufficient skills. You are not fast enough.
>
> The way our office is built is not suitable.
>
> Measurement instruments are not available.
>
> We're not familiar with those instruments.

One respondent, quite cynically, commented, "I have them [the guidelines] all within reach, and then a patient comes in, and then I tell my secretary, 'Please, keep the guidelines at hand.'"

Confirmation Stage

Little information was provided about the confirmation stage. Overall, the respondents showed little commitment to the guidelines (eg, "We do not feel committed to them."). However, they felt that positive reinforcement by certain facilitators could help to increase their commitment in the future, for instance, by the insurance companies, but especially by their own professional organization. One participant remarked, "Political support. It would be nice if the Society gave us the idea that there is support on the road toward working in accordance with the guidelines."

Discussion

Our theory-based focus group study on the diffusion of the Dutch physical therapy guidelines for low back pain yielded in-depth insights into the various determinants of guideline adherence. Despite the variety of opinions expressed, most of the participating physical therapists had rather unfavorable opinions about issues related to the dissemination process and provided relatively little information on the subsequent adoption process. Although all but one of the participants had possessed a recent copy of the guidelines for more than a year, none of them had applied the guidelines regularly or fully. These findings indicate that, notwithstanding the carefully considered development strategy and stepwise implementation plan,[20] the diffusion of the guidelines among our participants had not actually reached the stages of implementation and maintenance.

Two recent Dutch surveys also showed that the diffusion process had not been completed yet.[12,21] In one of the surveys, this was attributed to discrepancies between current practice and the recommendations in the guidelines.[12] Physical therapists perceived several barriers to guideline implementation, including a lack of knowledge or skills and the need for substantial structural changes relating to practice organization, staff, and equipment.[12] The rather unfavorable attitude identified in our study, reflected by opinions about the characteristics of the guidelines in the persuasion stage, contrasts not only with the findings of a Dutch survey,[12] but also with the positive attitude toward evidence-based practice that was found in surveys in Spain,[41] the United States,[5] and Australia.[1] Such differences among countries in the attitudes of physical therapists might be attributable to differences in the contents of the various national guidelines, which may reflect either a more biomedically oriented culture (eg, United States) or a more biopsychosocially oriented culture (eg, the Netherlands), making them more or less acceptable for individual therapists. The observed discrepancies could, however, also stem from the fact that participants generally tend to be more open and critical in qualitative studies[42] or from the development of a negative group norm during focus group interviews.[38] Such a tendency to express negative feelings as a result of certain group dynamics may have resulted in a negative bias.[38] Another explanation could be that we selected a nonrepresentative sample of PCG groups, with unfavorable opinions. As attending PCG group meetings was obligatory, however, our sample of physical therapists can be assumed

to be representative. In fact, our sample also included critical members, who can be assumed to be more reluctant to take part in voluntary surveys.

The relatively low level of guideline adherence and the commonly shared unfavorable opinions that were reported in this study seem to be related to perceived differences between the evidence-based guidelines and "the art of caregiving" as an inherent part of physical therapist practice.[43] Although guidelines were associated with uniformity of care, the individuality of each patient was considered to reflect the importance of intuition and creativity in daily practice. This perceived inconsistency coincides with current debates in the literature about evidence-based medicine versus common-sense medicine and the integration of scientific evidence and clinical expertise.[32,33] Although the Dutch physical therapy guidelines for nonspecific low back pain are not intended as a "cookbook" but as a guide,[19] our participants nevertheless perceived them as rigid recommendations. Such rigidity has been challenged as being at odds with individual patient needs and practitioner preferences, not allowing for any individual variation, and as being used as a standard against which clinicians may be judged without outside variables being taken into account.[44] Indeed, the use of guidelines as a simplistic algorithm has been acknowledged to have a potentially harmful effect on professionalism, which may do injustice to the complexity of medicine and the parallel and iterative thought processes assumed to be inherent in clinical judgment.[8] Our findings imply that the implementation and adoption processes of guidelines may benefit from strategies that are able to convince physical therapists of the intended judicious use of guidelines. Such strategies, for instance, may be derived from theories on information processing, which suggest discussion as a method to change knowledge, and from theories on attitude change, which indicate that message repetition is important in this respect, as is the provision of information tailored to the individual physical therapist's perceptions and behavior-specific beliefs.[45]

The theoretical framework that served as the foundation of our study enabled us to properly structure the focus group interviews, to produce a systematic and detailed analysis of the data collected, and to assign the various determinants to the consecutive stages of the diffusion process. The theory-based approach allowed us first of all to recognize that, due to the relatively nonadherent sample, the information we obtained did not cover the entire diffusion process.[23] The participants provided relatively little information on the determinants of the decision, implementation, and confirmation stages. This means that the theoretical saturation we observed after 3 focus group interviews applied only to the first 2 stages of the diffusion process and that a better understanding of the other 3 stages would require additional interviews with physical therapists with higher levels of adherence.

A second, somewhat related finding is the lack of information about communication channels and facilitators. Both aspects may be related to the organizational level rather than the individual level,[23,46] whereas the interviews concentrated on individual motivational determinants. Supplementary interviews, therefore, should take the organizational determinants into account as well.[41,47–49]

Third, the analysis revealed a new perceived characteristic of the guidelines in the persuasion stage, in addition to those predicted as being important by the original theory, namely the perceived credibility of the guidelines. Although empirical findings indicate that users want guidelines to be scientifically justifiable[50] and that the scientific evidence should be straightforward and not conflicting,[51] we came across only one framework of guideline adherence determinants that acknowledged that the potential adopters actually have to perceive them as credible, by identifying lack of agreement with the interpretation of evidence as a potential barrier.[17]

Several limitations should be mentioned. First, due to the limited space available in scientific journals, we had to restrict our report to only one part of Rogers' Diffusion of Innovations Theory. Reporting on the application of the entire theory, including the situational factors and the characteristics of the innovation decision, would have done more justice to the complex picture of guideline adherence. Second, the various theoretical concepts related to the successive stages of the diffusion process are not mutually exclusive. This overlap complicated the analysis of the focus group interviews considerably. Third, the trustworthiness of the results may be threatened by the use of theory and by a certain subjectivity on the part of the researchers.[39] This, for instance, may have made it more likely to find evidence that is supportive rather than nonsupportive for the theory and to have blinded the researchers to contextual aspects of the diffusion process. In addition to the measures we already applied to prevent such biases, the trustworthiness of the study could have been increased further by the use of an audit process.[39] As a final limitation, the actual level of guideline adherence by the physical therapists who participated in the focus group interviews was subjectively assessed. Despite the low levels of adoption and implementation

that could be inferred from the physical therapists' statements, most of them nevertheless had explicit and clear-cut opinions about the guidelines. These opinions, however, reflected several misconceptions with regard to the content, the aim, and the use of the guidelines, such as the exact meaning of nonspecific low back pain and the idea that the guidelines were meant as rigid treatment instructions. Thus, it could be questioned to what extent the determinants identified in our study are indeed related to actual guideline adherence.

Our theory-based qualitative study has offered the in-depth understanding of determinants of guideline adherence that is seen as the necessary start of a planned approach to develop effective interventions to increase evidence-based practice in physical therapy.[11,15,18] The detailed information we collected served as valuable input for a follow-up survey to gain further insight into the association between the qualitatively identified determinants and the actual level of guideline adherence among a representative sample of Dutch physical therapists.[26] That survey, in turn, offered some of the necessary foundations for the choice of potentially effective methods and strategies to enhance guideline implementation. Future studies on guideline implementation in physical therapy, as well as other health care disciplines, therefore, may benefit from adopting our approach while taking into account the limitations we discussed above. For a complete inventory of possible determinants of guideline adherence, it is especially recommended to apply a purposeful sampling strategy[37] to guarantee that the focus group interviews include physical therapists from each of the various stages of the diffusion process. Such a sampling strategy, in turn, could profit from the use of objective measures of guideline adherence, such clinical vignettes.[22,52]

Conclusion

We believe that the application of a theoretical framework offers an important advantage over other qualitative examinations of determinants of guideline adherence. Although the benefits of applying theory in implementation studies have been questioned,[53] we believe that our results illustrate the added value of such an approach. The limitations we encountered with regard to our approach, however, also support the view that applying theory in this field remains a challenging exercise.[34]

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A Qualitative Application of the Diffusion of Innovations Theory to Examine Determinants of Guideline Adherence Among Physical Therapists

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